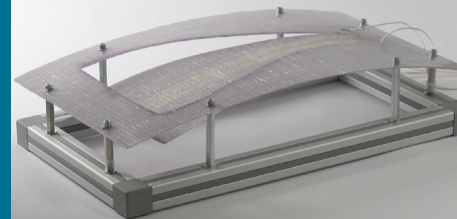
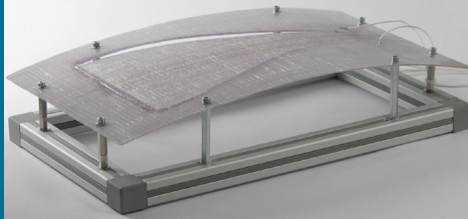
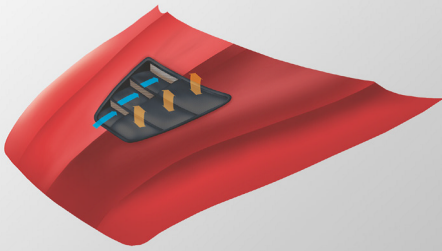




FRAUNHOFER ADAPTRONICS ALLIANCE



- 1 Example of use: automatically opening air duct
- 2 Demonstrator (passive / closed)
- 3 Demonstrator (active / opened)

LIGHTWEIGHT STRUCTURES WITH VARIABLE GEOMETRY AND STIFFNESS

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Innovation

Conventional construction solutions that enable deformations or changes in stiffness of a structure consist of a variety of components and have disadvantages concerning their heavy weight. Through functionally integrated lightweight construction it is conceivable to reduce system complexity and mass.

By integrating shape-memory actuators into fiber-reinforced polymers, it is possible to realize lightweight structures with variable geometry and stiffness.

Saving resources and emissions is possible due to

- reduction of mass due to the high specific energy density of shape-memory actuators
- reduction of system complexity by applying components with integrated functions

- integration of shape-memory actuators into polymer components using injection molding, hot pressing, extrusion, pultrusion, vacuum infusion.

Example of use

- Automatic air inlets in automobiles
- Shapeshifting blade geometry
- Adaptation of the resonance frequencies in oscillating systems
- Stiffness adaptation of lightweight spring elements

Our range of services

- Development and construction of lightweight structures with independent or controlled changes in geometry or stiffness
- Simulation-based design of individual adaptive lightweight solutions